

REMARKS

This Amendment rewrites claims 1, 5, 25 and 26, and amends the specification. The R⁷ and R⁸ proviso feature of claims 1, 25 and 26 is supported by page 3, line 7. The amendment of claim 5 merely conforms that claim to the proviso feature of claim 1. The amendment to the specification inserts the reference to international application PCT/EP00/13192 required by 37 C.F.R. § 1.78. Claims 1-7, 9-15, 20, 21, 23 and 25-27 are pending.

Examiner Lee is thanked for indicating the allowability of claims 20, 21, 23 and 27. It is believed this Amendment places the entire application in condition for allowance for the reasons which follow.

This Amendment inserts the reference to International application PCT/EP00/13192 required by 37 C.F.R. § 1.78(a)(2). In this regard, the Patent Office has recognized the applicants' priority claim, as evidenced by the inclusion of priority information on the Official Filing Receipt (copy attached). The Patent Office has adopted a policy by which a petition to accept an unintentionally delayed priority claim is not required where, as here, the applicant has made an informal priority claim elsewhere in the application and (2) the Office has recognized the priority

claim, as shown by the inclusion of the priority claim on the Official Filing Receipt. See "Requirements for Claiming the Benefit of Prior-filed Applications under 18-Month Publications," 66 Fed. Reg. 67087, 67089 (December 28, 2001).

The 35 U.S.C. § 102(b) rejection of claims 1-7, 9-12, 25 and 26 over PCT Patent Publication WO 98/22486 to Ewen et al. is respectfully traversed. Process claims 1-7 and 9-12 are directed to the preparation of ethylene polymers using a catalyst system formed by contacting a substituted¹ metallocene compound of formula (I) with a compound selected from a Markush group consisting of an alumoxane and a compound capable of forming an alkyl metallocene cation. The inventors have discovered that the use of a specified halogen-containing metallocene catalyst permits production of high molecular weight polyethylene in high yield.

Ewen et al. fails to anticipate the claimed process for polymerizing ethylene. Although Ewen et al. broadly discloses the utility of its process for polymerizing homopolymers and copolymers of vinyl monomers having from 2 to 20 carbon atoms (page 13, lines 6-12), only Example 7 is directed to ethylene polymerization, and the metallocene catalyst utilized therein - isopropylidene

¹At least one of R⁷ and R⁸ is not hydrogen.

[cyclopentadienyl-(7-cyclopentadithiophene)] zirconium dichloride - does not come within the scope of the claimed process.

The Patent Office cites the structures for "Y" listed on page 36 of Ewen et al. to justify its anticipation rejection. However, only two [formulae (g) and (l)] of the thirty-four (34) structures listed on pages 36-38 therein is relevant to the claimed process.

The Patent Office has not explained why one of ordinary skill in the art would be motivated to select either structure (g) or (l) rather than one of the other 32 structures shown on pages 36-38. Even assuming that he selected structure (g) or (l), one of ordinary skill in the art must choose the number of substituents (n and m) and then their position, since there are least two positions permitted for R substituents in the metallocene compounds having formulae (g) or (l). Moreover, in structures (g) and (l), the heteroatoms X can be N, P, NR^g, PR^g, O or S (Ewen et al., page 38, lines 3-8). In contrast, the heteroatoms A and B in the claimed process and compound can only be sulfur, or oxygen, or A and B can be a carbon atom.

In short, one of ordinary skill in the art would not "at once envisage" the claimed species. In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962); MPEP 2131.02, given the numerous other

metallocenes set forth in Ewen et al. at page 4, line 12 to page 17, line 14.

Claims 25 and 26 are directed to a metallocene compound of formula (I) and its corresponding ligand of formula (II). Both claims have been amended to exclude non-substituted compounds such as those disclosed by Ewen et al. The same points made above with respect to the process claims applies to the metallocene compound claims.

The Patent Office suggests that while anticipation by a generic disclosure may require that the claimed compounds be "at once envisaged" by one of ordinary skill, there is no requirement that one must be able to draw the presently claimed structural formula or write the name of each of the claimed metallocene (Official Action, page 5, lines 15-17). This language was taken from In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962) (copy attached):

[I]t is our opinion that Karrer has described to those of ordinary skill in this art each of the various permutations here involved as fully as if he had drawn each structural formula or written each name.

Ewen et al. presents a considerably broader genus than the limited 20 compound class disclosed by Karrer in Petering. In short, one of ordinary skill in the art would not envisage the

claimed substituted metallocene compounds from Ewen et al. Reconsideration and withdrawal of the anticipation rejection of claims 1-7, 9-12, 25 and 26 over Ewen et al. are earnestly requested.

The claimed process for polymerizing ethylene is patentable over Ewen et al. because use of the metallocene catalysts recited by the claimed process provides surprising results which one of ordinary skill in the art would not expect in view of Ewen et al. More particularly, the catalysts employed in the claimed process exhibit unexpectedly higher activity, and produce ethylene having a much higher molecular weight than would be expected by one of ordinary skill in the art.

These surprising results are demonstrated in Table 1. Compounds Zs-1, Zs-2 and Zs-2 each have at least one of R⁷ and R⁸ substituent which is not hydrogen. These compounds have higher catalytic activity and I.V. than compounds Zs-51 and Zs-50 which are not substituted at either the R⁷ or R⁸ position.

The 35 U.S.C. § 103(a) rejection of claims 13-15 over Ewen et al. in view of U.S. Patent No. 5,948,873 to Santi et al. is respectfully traversed. These claims all depend from claim 1, and

thus are patentable over Ewen et al. for at least the same reasons as claim 1.

Applicants have previously pointed out that one of ordinary skill in the art would not combine Ewen et al. with Santi et al. because the secondary reference discloses a different class of metallocenes. It is even more apparent that Santi et al. fails to disclose or suggest that the metallocene compounds of the claimed process exhibit significantly higher activity and produce polyethylene of higher molecular weight than suggested by Ewen et al. when used to polymerize propylene.

Reconsideration and withdrawal of the obviousness rejection of claims 13-15 over Ewen et al. in view of Santi et al. are earnestly requested.

It is believed this application is in condition for allowance. Reconsideration and withdrawal of all objections and rejections of claims 1-7, 9-21 and 23-27, and issuance of a Notice of Allowance directed to claims 1-7, 9-15, 20, 21, 23 and 25-27, are earnestly requested. The Examiner is requested to telephone the undersigned should he believe any further action is required for allowance.

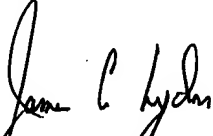
A Petition and fee for a one month Extension of Time are attached. It is not believed that any additional fee is required

U.S. Patent Appln. S.N. 09/914,305
AMENDMENT

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for entry and consideration of this Amendment. Nevertheless, the Commissioner is hereby authorized to charge our Deposit Account 50-1258 in the amount of any such required fee.

Respectfully submitted,



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Enclosures:

Petition for Extension of Time
Official Filing Receipt (Copy)
In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962)